

Pipeline programs at the Case CCC

Mark W. Jackson, PhD

Associate Professor,

Case Western Reserve University, Department of Pathology

Associate Director for Training & Education, Case CCC

Director, CanSUR R25 Program

Director, Cancer Biology T32

Director, Cancer Biology Graduate Program in Pathology

Damian Junk, PhD

Assistant Director for Training & Education, Case CCC

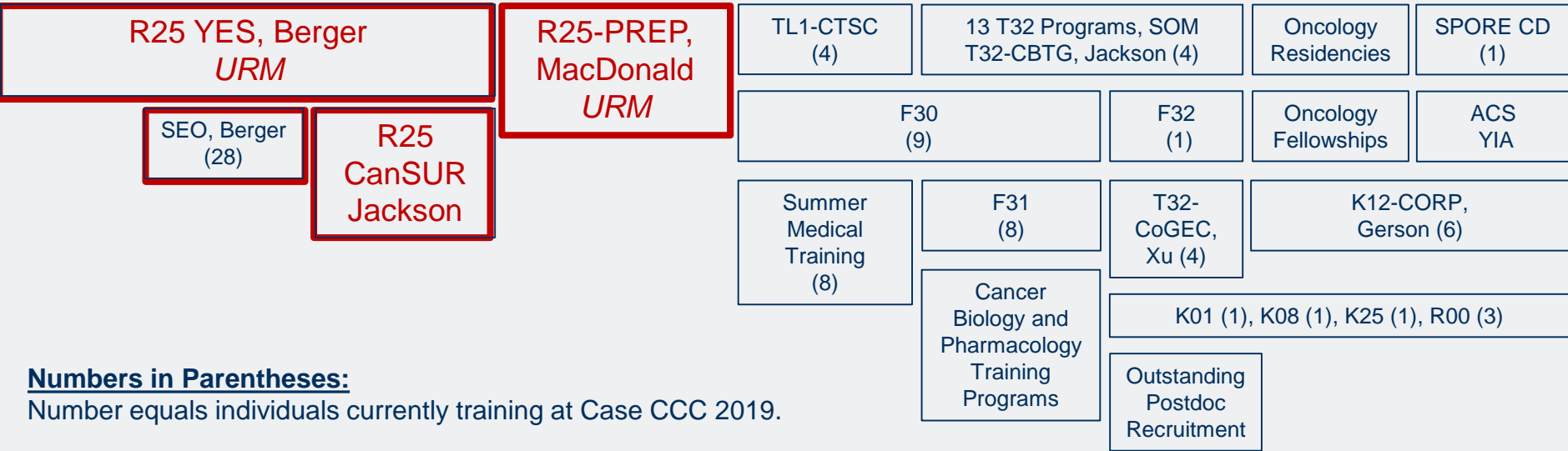


2019 Training Portfolio in Cancer Research

Middle School (12)	High School (50)	Undergraduate (37)	Post-Baccalaureate (8)	Medical Students (16)	Graduate Students (184)	Postdocs (187)	Post-MD (77)	Junior Faculty (20)
--------------------	------------------	--------------------	------------------------	-----------------------	-------------------------	----------------	--------------	---------------------

Case CCC Pipeline Programs

Middle School (12)	High School (50)	Undergraduate (37)	Post-Baccalaureate (8)	Medical Students (16)	Graduate Students (184)	Postdocs (187)	Post-MD (77)	Junior Faculty (20)
--------------------	------------------	--------------------	------------------------	-----------------------	-------------------------	----------------	--------------	---------------------



Numbers in Parentheses:

Number equals individuals currently training at Case CCC 2019.

Expansion of pipeline programs to stimulate youth to pursue education and training for future careers as cancer research.

R25-YES Pipeline Program

P30 Supplement Continuing Umbrella of Research Experience: P30CA043703-S1: Berger

Scientific Enrichment Opportunity Program (Berger)

- Trained over 200 Cleveland area URM High School students with a college matriculation rate of over 90%



Center to Reduce Cancer Health Disparities

NCI R25CA221718
NCI P30CA043703

Learn to Beat Cancer

- Middle school students and family

Research to Beat Cancer

- High school students
- Undergraduate students

Teach to Beat Cancer

- 6th-12th grade teachers





Learn to Beat Cancer

- Middle school students and family
- Objective: to engage, excite, educate and encourage URM students in 6th, 7th, and 8th grade, their family members, and their teachers and motivate them to pursue careers in health care and cancer research.
- 5 Saturday workshops/year
 - principles of cancer biology; disparities; prevention; risk reduction; clinical concepts; responsible conduct of research and motivate them to pursue careers in health care and cancer research.
- Active learning methods
- Combination of education and community outreach

Research to Beat Cancer

- Research immersion for high school and undergraduate students (8 weeks)
- Educational enhancement and professional development
 - College Entrance Support (ACT/SAT practice; college and financial aid advising; scholarship discussions).
 - Strategic Book Reviews (provide inspiration and understanding how others overcome environmental handicaps to develop successful careers)
 - Near Peer Mentoring (MD/PhD students)
 - Physician Shadowing
 - Conferences and Seminars
 - Cancer Center Retreat
 - Symposium: Scientific Poster Session



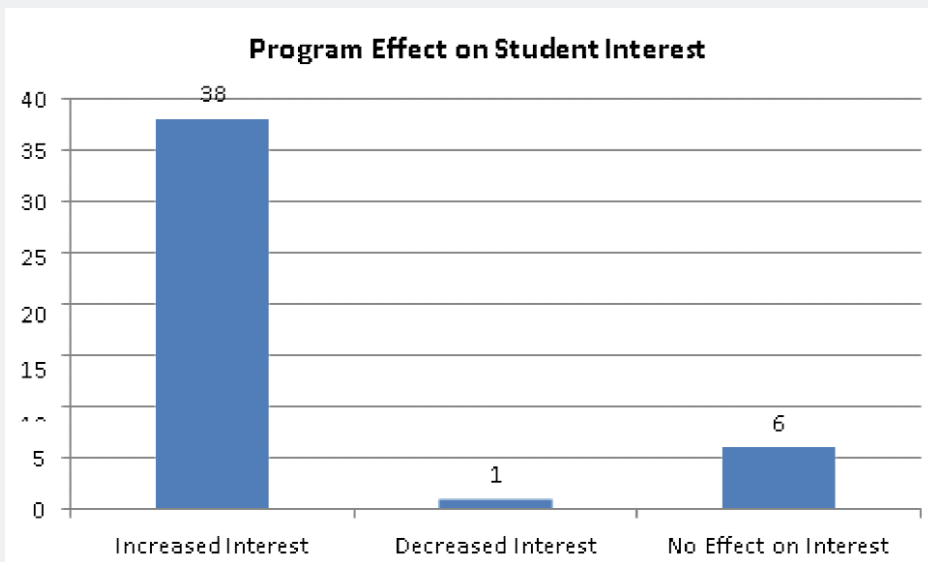
YES

Teach to Beat Cancer

Objective: Provide 6th-12th grade teachers with opportunities to:

- Engage in scientific research and education
- Develop curriculum to teach principles of cancer biology, to encourage risk reduction activities, and foster the elimination of cancer disparities.
- Connect and motivate middle and high school students to pursue careers in biomedical sciences and cancer research.

YES



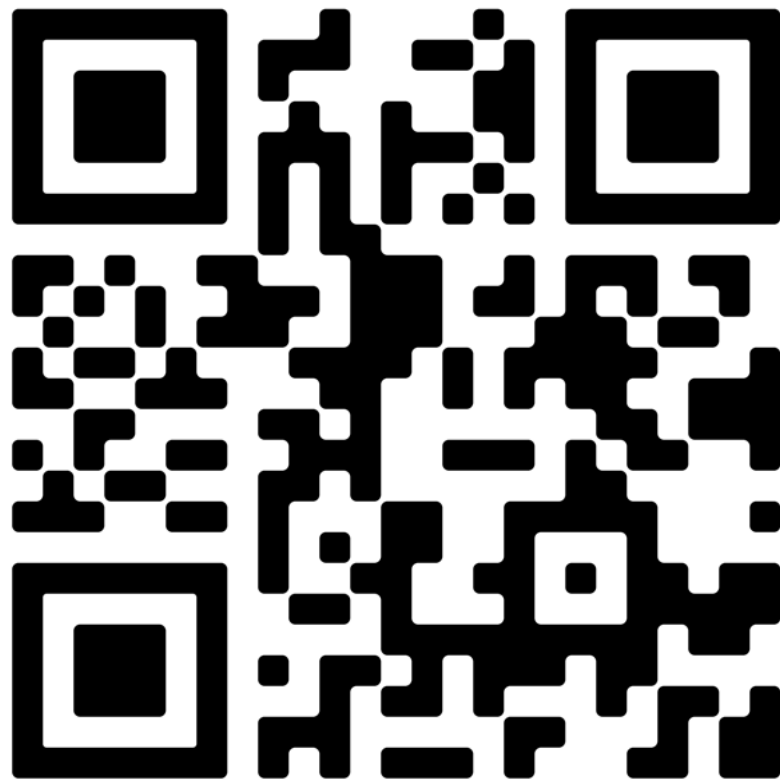
- Of 36 students high school students who participated in the 2018 YES program, eight were rising seniors.
- All eight have been accepted and will attend college this year, most with full scholarships, and most with biomedical majors.

R25-CanSUR

PDs: Mark Jackson (CWRU)
Goutham Narla (University of Michigan)



NCI R25CA225461 & NCI P30CA043703



R25-CanSUR

32 undergraduates each summer (10 weeks)

Program Elements:

Mentored Research Experience

- One of 80 Case CCC members' labs
- Spanning 7 Scientific Programs

Week 1 Cancer Immersion ("Bootcamp")

- Cancer Research Lectures (The History of Cancer; Fundamentals of Cancer Biology; Current Cancer Therapies; Epidemiology; Cancer Prevention; Cancer Research Discovery Techniques; Cancer Models; Responsible Conduct in Research, etc.).
- Luncheon to meet mentor and junior mentor (3rd day)
- Overview of careers in cancer research/oncology
- Panel discussions with of cancer research/oncology trainees



R25-CanSUR



32 undergraduates each summer (10 weeks)

Program Elements:

Social interactions to build comradery

- Day 1 trip to "The Corner Ally" on "Lolly the Trolley"
- Meet-ups at Mitchell's Ice Cream

Weekly Career Enrichment Lunches

DATE	Topic	Speakers
June 14	Introduction to scientific communication Working in teams	Dr. Mark Jackson
June 21	BSTP Admissions - what are they looking for? MSTP Admissions - what are they looking for?	Dr. George DUBYAK Dr. Derek Abbott
June 28	Rigor and Reproducibility	Dr. Goutham Narla
July 12	Cancer Consequences of the Obesity Pandemic	Dr. Nathan Berger
July 19	Reverse Lectures	7 Scholar teams
July 25*	* THURSDAY - Cancer Center Retreat Tinkham Veale Center from 2:00-6:00, reception to follow	
July 26	A Patient's Perspective Draft of slides due to Drs. Jackson/Narla/Junk	Caroline Farrington
August 2	Symposium Practice Abstracts due to Drs. Jackson/Narla/Junk	CanSUR scholars
August 7*	* WEDNESDAY - CanSUR Symposium	

CanSUR Scholars' Symposium



R25-CanSUR



2019 (Year 1):

- 278 applications
 - 88 colleges/universities; 32 states
 - 60% female/40% male
 - 15% URM applicants; 17% disadvantaged

- Admitted
 - 16 colleges/universities; 13 states
 - 40% female/60% male
 - **22% URM applicants; 28% disadvantaged**

PREP- R25

Postbaccalaureate Research Education Program (PREP)

- For trainees recently awarded a bachelor's degree, but are not highly competitive for graduate/medical school admission.
- Scholars receive math and science training, GRE workshops and seminars, professional development, and graduate application assistance.
- **75% of PREP Scholars are in Case CCC members' labs**

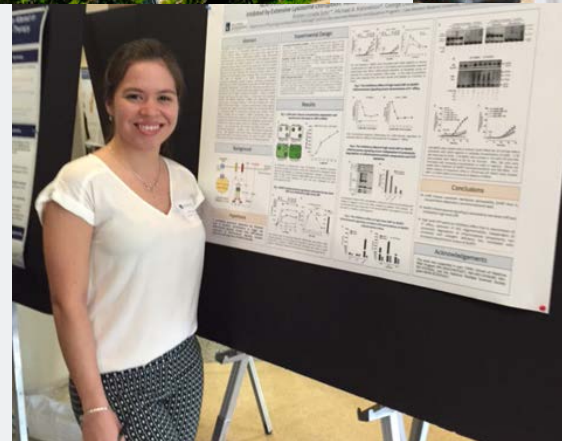
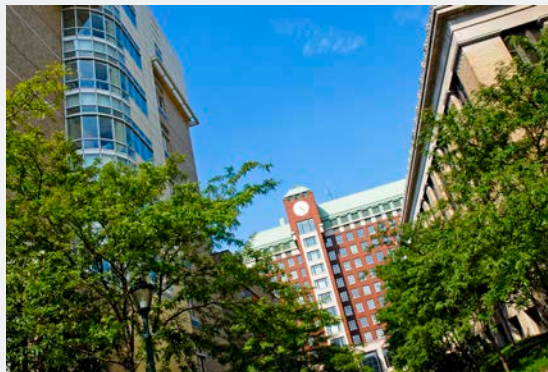


PDs: Paul N. MacDonald
Diana Ramirez

Minority Access to Research
Careers (MARC)
NIGMS 5R25GM075207-13

PREP- R25

- **73** Scholars over 12 cohorts
 - 62.2 % female
 - 33 Puerto Rico (44.6%)
 - 21 African American/Black (28.4 %)
 - 18 Hispanic, non-PR (24.3 %)
 - 2 Native American (2.7 %)
- **85%** (62 of 73) entered PhD or MD/PhD programs
- **92%** (57 of 62) that entered PhD programs finished or are still in PhD programs



PREP-R25 serves as a pipeline into CWRU graduate programs

Table I. CasePREP Scholar PhD Program Placement (n=62)

<u>Institution</u>	<u>n</u>	<u>Institution</u>	<u>n</u>
CWRU	19**	U of Alabama, Birmingham	1
U of Michigan	5*	U of California, San Fran	1
Ohio State U	4	U of California, San Diego	1
Emory U	3*	U of Illinois, Chicago	1*
U of Pennsylvania	4	U of Iowa	1
Weill Cornell	3	U of North Carolina-CH	1
Albert Einstein	2	U of Pittsburgh	3*
NYU-Sackler	3	U of Texas, Ausitn	1
Baylor	1	U of Utah	1
Columbia U	1	U of Washington	1
Johns Hopkins	1	U of Puerto Rico, Ponce	1
Northwestern U	1	Vanderbilt U	2

*indicates a single Scholar entering MD/PhD program

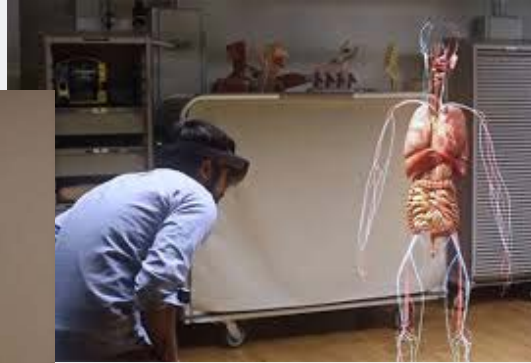
Value Added by Pipeline Programs

- Provide mentoring experience to Case CCC trainees.
- Minority students (medical students, graduate students, and PREP scholars) are engaged in the educational processes.
- “Train the Trainers” Workshop to establish and improve mentoring skills.



Value Added by Pipeline Programs

- Fostering innovative educational efforts
- Microsoft HOLO-LENS VR technology
- **HOLO-Cancer Education Experience**



Case Western Reserve University
Holographic Human Anatomy

Improving our Pipeline Programs

Middle School (12)	High School (50)	Undergraduate (37)	Post-Baccalaureate (8)
--------------------	------------------	--------------------	------------------------

= 107 total (2019)

0

53

17

23 = 93 total for prior 5-year CCSG

50

~200

160

40 = 450 total projected for the next 5-years

+

~ 50 family members

Pipeline Support Staff

Stanton Gerson, Case CCC Director

Christina Keely, Program Administrator, R25-YES

Carmen Houston, Education Outreach Specialist, R25-YES

Gena Richmann, Education Program Manager, R25-CanSUR

Malana Bey, Department Administrator, Office of Graduate
Education, R25-PREP

Melanie Prestage, Training and Education Program
Administrator, Case Comprehensive Cancer Center

Thank You
Questions/comments?

